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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,316	11/01/2001	Hideyuki Harada	P/1071-1485	2339

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EXAMINER

MAYES, MELVIN C

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 03/12/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/001,316

Applicant(s)

HARADA ET AL.

Examiner

Melvin Curtis Mayes

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-- Th MAILING DATE of this communication appears on the cov r sheet with the corr spondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11 is/are rejected.
- 7) ☒ Claim(s) 6-10 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

**DETAILED ACTION**

***Election/Restrictions***

(1)

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-12, drawn to a method of producing a multilayered ceramic substrate, classified in class 156, subclass 89.12.
- II. Claims 13-20, drawn to a multilayered ceramic substrate, classified in class 428, subclass 210.

(2)

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the multilayered ceramic substrate stack can be made by coating the shrinkage-reducing layer and first ceramic layer on the second ceramic layer and/or forming the opening in the first layer after coating or stacking.

(3)

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

(4)

During a telephone conversation with Edward Meilman on February 27, 2003, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claim 13-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 103***

(5)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(6)

Claims 1-5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mandai et al. 6,432,239.

Mandai et al. disclose a method of producing a ceramic multilayer substrate comprising: providing green sheets having an opening portion to form a cavity and providing green sheets having no opening; providing heat shrinkage inhibiting inorganic composition layers; laminating the green sheets and inorganic composition layers such that green sheets and inorganic composition layers are alternately laminated and the opening portions form a cavity in the laminate with an inorganic composition layer exposed as the bottom of the cavity to protect the bottom of the cavity from heat shrinking at firing; and firing the laminate. The bottom of the cavity may be formed in such a manner that the green sheet is exposed. Mandai et al. also disclose that the laminate may be formed such that inorganic composition layers are provided as the upper side and underside surface layers of the multilayer substrate and disclose that the green sheets and inorganic composition layers may be formed separately and laminated to form a laminate. Mandai et al. disclose using inorganic composition layers of thickness of 1-20  $\mu\text{m}$  with green sheets of thickness of 100  $\mu\text{m}$  (col. 8, line 42 – col. 9, line 34, col. 12, lines 27-39, col. 13, lines 7-30, col. 14, lines 10-15).

By providing the laminate with heat shrinkage inhibiting inorganic composition layer between a green sheet having an opening to form a cavity and a green sheet having no opening

such that an inorganic composition layer is exposed at the bottom of the cavity or such that green sheet is exposed at the bottom of the cavity, a shrink-reducing layer or pad of shrink-reducing material is obviously positioned along the boundary between a green sheet having an opening for forming a cavity and a green sheet having no opening so that the shrinkage-reducing layer is exposed at an end of the inner peripheral surface of the cavity, as claimed.

By providing the inorganic composition layer between a green sheet having an opening to form a cavity and a green sheet having no opening as disclosed by Mandai et al., a shrinkage-reducing pad having an area greater than 10% of the area of the green sheets and being a film layer of planar surface identical to that of the green sheets, as claimed in Claims 3 and 4, is obviously provided.

By providing the inorganic composition layers of thickness of 1-20  $\mu\text{m}$  and the green sheets of thickness of 100  $\mu\text{m}$ , as disclosed by Mandai et al., the inorganic composition layer (shrinkage-reducing pad) obviously has a thickness less than or equal to 20% of the depth of the cavity, as claimed in Claim 5.

By providing the laminate with inorganic composition layers as the upper side and underside surface layers of the laminate, as disclosed by Mandai et al., two additional shrinkage-inhibiting layers are obviously provided which cover both end faces of the laminate, as claimed in Claim 11.

*Allowable Subject Matter*

(7)

Claims 6-10 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

(8)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ryugo et al. disclose glass as an additive in inorganic material shrinkage inhibiting green sheets but discloses that the sintering temperature of the additive and the inorganic material is higher than the sintering temperature of the ceramic of the green sheets to be sintered.


(9)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 703-308-1977. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM  
March 7, 2003